White Horticultural Park Evaluation of Entrance and Parking Alternatives:

Background: Bowman Consulting Group (BCG) performed a site investigation of the White Horticultural Park to evaluate five alternate entrance locations and parking areas. BCG also reviewed available information including correspondence from the VDOT and county mapping and regulations. Particular weight was given to the December 15, 2005 correspondence from Paul Kraucunas of VDOT. BCG prepared sketch plans of the various alternatives along with engineer's cost estimates based on unit pricing information provided by the Fairfax County Park Authority. The engineer's estimates are conceptual and reflect the conceptual stage of the development plans.

Alternate #1, Princess Anne Entrance: The Princess Anne access location involves widening of the existing entrance and improvement of Princess Anne Street. The Princess Anne Street improvements were estimated to consist of 330 lineal feet of widening. An alternate turn-around is proposed, with on-site dedication, in accordance with VDOT street standards and widening and paving of the existing driveway. This alternative does not appear to require any additional off-site dedication or off-site easement acquisition. No significant clearing or grading would be required to construct this alternative.

Alternate #2, Rolfs Street Entrance: The Rolfs Street entrance will require dedication of right-of-way from the adjacent property to allow construction of the street extension and alternate turn-around in accordance with VDOT street standards. Clearing and grading through the on-site woods will be required to reach the parking lot area.

Alternate #3, Horseman Lane Entrance: The Horseman Lane entrance location would be onto an existing cul-de-sac. According to VDOT, the cul-de-sac is contained within temporary easements and they would request permanent dedication of right-of-way from the adjacent properties. It has been BCG's experience that if the adjacent owner's refuse to dedicate right-of-way, a new entrance would still be allowed if it can be demonstrated a good-faith effort to acquire the right-of-way has been made. An entrance in this location will require filling and impact to the existing farm pond located on-site. Without detailed topographic information or design detail, it is not possible to determine the area of impact, but it appears permits from the Corps of Engineers and DEQ would be required. Below is a description of the permitting requirements for wetland impacts. Additional construction costs to grade and clear this area will be required. A significant distance of emergency access roadway across the existing field is required to reach the existing residence.

Alternate #4, Goldsboro Street Entrance: There are no significant physical constraints to construction of the entrance and parking area in this location. The parking lot area is level and clear. This location also will require a significant distance of emergency access roadway across the existing field to reach the existing residence. No research was done into the status of the abandonment of the Goldsboro Street stub.

Alternate #5, Kerns Road Entrance: This location has limited available entrance sight distance. Speed bumps along the existing roadway reduce the travel speed of vehicles and may justify a waiver of entrance sight distance if the entrance can not be located to yield the specified distance. It appears dedication of an access easement or grading easements from adjacent properties will be required to construct the entrance. This location will require a significant distance of emergency access roadway to reach the existing house. The roadway will require clearing and grading of significant natural wooded and sloped areas.

Wetland and Stream Permitting and Mitigation

In Virginia, a Joint Permit Application process has been implemented for authorization to impact both nontidal and tidal wetlands and streams. In order to obtain authorization for impacts, a Joint Permit Application (JPA) must be submitted to the Virginia Marine Resources Commission (VMRC), the U.S. Army Corps of Engineers (USACE), and the Virginia Department of Environmental Quality (DEQ). VMRC only takes jurisdiction over tidal wetlands and waterways, as well as those nontidal waterways receiving greater than 5 square miles of drainage. The USACE and DEQ have jurisdiction over both nontidal and tidal wetlands and waterways.

Most residential and commercial developments will require a Virginia State Program General Permit (SPGP) from the USACE. Development projects with up to 0.10 acre of wetland impacts and up to 300 linear feet (LF) of stream impact will qualify for the Activity 1, Category A SPGP. Projects with up to 0.50 acre of wetland impacts and up to 300 LF of stream impact will qualify for the Activity 1, Category B SPGP. Once USACE determines that the project is eligible for Category A or B, no further USACE authorization would be required for these impacts; however, a VWP General Permit would still need to be obtained. Larger development projects impacting from 0.50 to 1.0 acre of nontidal wetlands and up to 2,000 LF of stream impact will qualify for the Activity 1, Category C SPGP. For the Category C permit, the USACE has a 45-day review period once a complete JPA is received, which includes a review by USFWS and other agencies.

Effective January 26, 2005, DEQ revised the four Virginia Water Protection (VWP) General Permits available for development projects. Most residential and commercial developments can be permitted under VWP General Permit WP4. If impacts to wetlands and streams are less than 0.1 acre, regardless of activity, a Reporting Only VWP General Permit may be obtained for the project, if eligible. Projects impacting up to 2 acres of wetlands/streams, up to 500 LF of perennial stream, and up to 1500 LF of intermittent stream will qualify for a WP4. A 45-day review period begins once a complete JPA is received.

Projects that exceed the SPGP and VWP General Permit nontidal wetlands/streams impact thresholds, or that the DEQ and USACE determines will have more than minimal individual and cumulative impacts, will require Individual Permit(s) from DEQ and/or USACE. The Individual Permit process can take from 6 to 12 months and requires

public notices and other agency reviews including the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and Virginia Department of Conservation and Recreation.

Wetland mitigation is required for all projects when total impacts to wetlands and streams are greater than 0.1 acre. Standard vegetated wetland mitigation ratios are 2:1 for forested wetlands, 1.5:1 for scrub/shrub wetlands, 1:1 for emergent wetlands, and 1:1 for open water wetlands. Compensation for vegetated wetland impacts may include the onsite or offsite creation, restoration, or enhancement of wetlands, the purchase of wetland bank credits from an approved mitigation bank, or the contribution to an in-lieu fee fund (i.e., the Virginia Aquatic Resources Trust Fund). The cost of onsite or offsite wetland mitigation varies depending on the site, and there are additional costs associated with it including five or more years of monitoring to ensure that the site meets certain success criteria. Wetland bank credits currently range from $95,000 to $125,000 per credit/acre. In order to avoid significant mitigation costs and agency review, impacts to vegetated wetlands should be minimized to the greatest extent possible.

Stream mitigation is also required for all projects when total impacts to wetlands and streams are greater than 0.1 acre, or stream impacts are greater than 300 LF. Onsite stream mitigation may include preservation, in the form of conservation easements, and/or active restoration such as riparian buffer planting and stream bank stabilization. Often it is not possible to mitigate for all of the stream impact onsite, thereby requiring that offsite stream mitigation be implemented or purchased, or payment be made into an in-lieu fee fund (i.e., the Virginia Aquatic Resources Trust Fund). Depending on the quality of the stream impacted, this cost typically ranges from $100 to $200 per linear foot. In order to avoid significant mitigation costs and agency review, impacts to streams should be minimized to the greatest extent possible.

Costs Estimates													
Itemized Road Amenities													
Item	**Quantity**	**Unit**	**Unit Price**	**Alternative #1 Princess Anne Lane**	**Princess Anne Lane Total**	**Alternative #2 Rolfs Road**	**Rolfs Road Total**	**Alternative #3 Horseman Lane**	**Horseman Lane Total**	**Alternative #4 Goldsboro Court**	**Goldsboro Court Total**	**Alternative #5 Kerns Road**	**Kerns Road Total**
Clearing (per acre-light $5,500)	1	AC	$5,500.00	0.0	$0	0.0	$0	0	$0	0.0	$0	0.0	$0
Clearing (per acre-medium $8,500)	1	AC	$8,500.00	0.7	$5,950	0.5	$4,250	0.75	$6,375	0.8	$6,800	0.0	$0
Clearing (per acre-heavy $11,,000)	1	AC	$11,000.00	0.0	$0	0.0	$0	0	$0	0.0	$0	0.8	$8,250
Excavation - 6" to 24"	100	CY	$15.00	200.0	$3,000.00	250	$3,750.00	200	$3,000.00	250.0	$3,750.00	300.0	$4,500.00
Remove Excess Excavated Material From	100	CY	$20.00	50.0	$1,000.00	50.0	$1,000.00	50	$1,000.00	50.0	$1,000.00	400.0	$8,000.00
Select Borrow Structural Fill	100	CY	$28.00	25.0	$700.00	25.0	$700.00	300	$8,400.00	50.0	$1,400.00	50.0	$1,400.00
Primary Road Turn lane 12' Wide (12" stone, 8" base 2" surface) (includes clearing and excavation)	100	LF	$300.00		$0.00		$0.00		$0.00		$0.00	250.0	$75,000.00
Turn around (8" stone, 6" base, 2" surface, includes excavation)	50	SY	$115.00	60.0	$6,900.00	60.0	$6,900.00		$0.00	0.0	$0.00	0.0	$0.00
Park Entrance 24' Wide, 20' asphalt w/2' (6" stone 2" asphalt includes clearing and excavation)	100	LF	$150.00	600.0	$90,000.00	400.0	$60,000.00	550	$82,500.00	75.0	$11,250.00	165.0	$24,750.00
Storm Sewer		EA	$25,000.00	1.0	$25,000.00	1.0	$25,000.00	1	$25,000.00	1.0	$25,000.00	1.0	$25,000.00
Parking Asphalt with Curb and Gutter	100	SP	$1,600.00	26.0	$41,600.00	26.0	$41,600.00	26	$41,600.00	26.0	$41,600.00	25.0	$40,000.00
Trail 6' Wide, 4" stone, 2" asphalt includes exc. & clearing)	1	LF	$27.00	300.0	$8,100.00	300.0	$8,100.00	300	$8,100.00	550.0	$14,850.00	300.0	$8,100.00
Park Gate		EA	$1,200.00	1.0	$1,200.00	1.0	$1,200.00	1	$1,200.00	1.0	$1,200.00	1.0	$1,200.00
Traffic Control Signs		EA	$175.00	5.0	$875.00	5.0	$875.00	5	$875.00	5.0	$875.00	5.0	$875.00
General Site Restoration (with top soil)		SY	$3.50	500.0	$1,750.00	300.0	$1,050.00	500	$1,750.00	500.0	$1,750.00	600.0	$2,100.00
Land Acquisition													
Mobilization/Bonds/Easements		EA	$25,000.00	1.0	$25,000.00	1.0	$25,000.00	2	$50,000.00	1.0	$25,000.00	3.0	$75,000.00
Grasscrete (18' wide access)		LF	$125.00					0	$0.00	625.0	$78,125.00	300.0	$37,500.00
Stormwater Management		LS	$50,000.00	1.0	$50,000.00	1.0	$50,000.00	3	$150,000.00	1.0	$50,000.00	1.0	$50,000.00
Off-site costs (PA and Rolfs)					$136,500.00		$125,000		$0		$0.00		$0.00
SUBTOTAL					$397,575.00		$354,425		$379,800		$262,600.00		$361,675.00
ADD-Ons													
10% construction contingency					$53,407.50		$47,943		$37,980		$26,260.00		$36,167.50
6% Staff					$3,204.45		$2,877		$2,279		$13,130.00		$18,083.75
35% Contingency					$139,151.25		$124,049		$132,930		$91,910.00		$126,586.25
GRAND TOTAL					$729,838.20		$527,368		$417,780		$393,900.00		$542,512.50